

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR LETTERS PATENT

**Control-based Content Pricing**

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ATTORNEY'S DOCKET NO. MS1-1898US

## **TECHNICAL FIELD**

[0001] This invention relates to media content distribution and, in particular, to control-based content pricing.

## **BACKGROUND**

[0002] Television-based client devices, such as digital video recorders, are implemented by television viewers to receive video content in the form of video on-demand entertainment, such as movies, and to receive broadcast and/or interactive television entertainment and information. For example, a viewer can initiate receiving a movie for viewing from a video on-demand server system whenever it is convenient for the viewer to watch the movie. A digital video recorder includes a hard disk memory so that the viewer can also record the video content, and other media content of interest to the viewer, for future viewing when more convenient for the viewer.

[0003] Typically, media content providers of music, movies, and television control and authorize the distribution of the media content based on economic models that charge consumers a subscription fee to obtain authorized access to the media content, such as a monthly subscription fee or a one-time pay-per-view fee to receive a particular movie, sporting event, or other type of premium program for viewing. Further, typical subscription pricing, such as a monthly fee, is static from month to month and does not reflect the viewing choices and habits of individual viewers.

[0004] The advent of on-demand programming, such as video on-demand from a media content server system and recorded on-demand media content, provides a viewer with the option to navigate a program with media content

navigation features commonly referred to as “trick modes”. These navigation features are typically initiated by a viewer with a remote control device and include commands such as fast-forward, skip-ahead in the program, jump to a next segment, pause the program, rewind, and the like.

[0005] Fast-forward and skip-ahead navigation control inputs from a viewer, while beneficial when used to shorten the time for viewing a program, enables the viewer to skip past advertisements that may be prepended to a video on-demand movie, for example, or that may be interspersed between segments of a program, sporting event, or movie. In addition to the revenue obtained from viewers for monthly content subscriptions and pay-per-view purchases, these advertisements for products and services are a large source of revenue for a provider of the media content. However, advertisers will be increasingly unwilling to have their advertising messages communicated with media content that a viewer can navigate to skip over the advertisements.

[0006] Accordingly, media content providers need to provide alternate advertisement revenue models so that advertisers will continue to sponsor advertising messages being delivered with media content for consumer viewing.

## **SUMMARY**

[0007] Control-based content pricing is described herein.

[0008] In an implementation, a content server distributes media content to a client device in response to a request from the client device to receive the media content. A valuation application allocates a cost to the client device when the media content is distributed to the client device. The content server receives a view control input from the client device that indicates how the media content is to

be rendered and the valuation application adjusts the cost according to the view control input and how the media content is to be rendered.

[0009] In another implementation, a content server distributes media content with an associated advertisement to a client device in response to a request from the client device to receive the media content. A valuation application allocates a cost to the client device when the media content and the associated advertisement is distributed to the client device. The content server receives a content navigation input from the client device that indicates how the media content and the associated advertisement is to be rendered, and the valuation application adjusts the cost according to the content navigation input and whether the associated advertisement is rendered for viewing.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

[0010] The same numbers are used throughout the drawings to reference like features and components.

Fig. 1 illustrates various components of a media content distribution system in which an exemplary embodiment of control-based content pricing can be implemented.

Fig. 2 is a flow diagram that illustrates an exemplary method for an embodiment of control-based content pricing.

Fig. 3 is a flow diagram that illustrates an exemplary method for an embodiment of control-based content pricing.

Fig. 4 illustrates various components of an exemplary client device implemented in a television-based system.

## **DETAILED DESCRIPTION**

[0011] Control-based content pricing is described to provide a flexible advertisement revenue model that reflects user viewing choices and selections during playback of requested media, and enables targeted advertising and media content delivery, while maintaining consumer privacy. For example, the cost to order and receive media content, such as a on-demand movie, sporting event, or even music, may be reduced or negated by a user willing to watch and/or listen to an advertisement prior to or during a rendering of the media content. Further, control-based content pricing may apply to other non-video services, such as a stock ticker data feed that is distributed as media content via a client device.

[0012] Control-based content pricing allows for user-personalized pricing where price is a direct function of user viewing interaction. Further, the pricing may be expressed as a debit function, such as a debit to receive an on-demand movie, or as a credit function, such as a credit to watch an advertisement or infomercial before receiving the on-demand movie. The credit and/or debit functions of the pricing may also be based on view control inputs, such as content navigation inputs, received as user-input commands initiated with a remote control device.

[0013] The following discussion is directed to television-based entertainment and information systems, such as interactive television networks, cable networks, satellite networks, and Web-enabled television networks. Client devices in such systems range from full-resource clients with substantial memory and processing resources, such as television-enabled personal computers and television recorders equipped with hard-disks, to low-resource clients with limited memory and/or processing resources, such as traditional set-top boxes that are also implemented to

record broadcast programs. While aspects of the described systems and methods for control-based content pricing can be implemented in any number of television-based entertainment and information systems, the systems and methods are described in the context of the following exemplary system architectures.

**[0014]** Fig. 1 illustrates various components of a media content distribution system 100 in which an exemplary embodiment of control-based content pricing can be implemented. The system 100 includes a content server 102, one or more client devices 104, a display device 106, and a storage media 108. The content server 102 controls distribution of on-demand media content 110 which is maintained by the storage media 108. The on-demand media content can include on-demand movies, programs, music, advertisements, movie trailers, and any other type of audio, video, and/or image content. Although the content server 102 and the storage media 108 are illustrated and described as separate and/or remote components of the media content distribution system 100, the content server 102 may contain the storage media as an integrated memory component.

**[0015]** A client device 104 can be implemented in any number of embodiments, such as a set-top box, a digital video recorder (DVR) and playback system, and as any other type of client device that may be implemented in a television-based entertainment and information system. Further, client devices 104 may be implemented with any number and combination of differing components as described below with reference to Fig. 4. For example, in an embodiment of control-based content pricing, a client device 104 may include, or be directly connected to, a storage media for local-caching of media content 110 to first download the media content from content server 102 and then render the media content.

[0016] In the example shown in Fig. 1, a client device 104 receives the media content 110 from the content server 102 via a communication network 112 which can be implemented as any data communication medium, Internet protocol (IP) connection, or communication system having any protocol and/or messaging format. In an embodiment, the content server 102 communicates with a client device 104 via communication network 112 using simple object access protocol (SOAP) messages transported using hypertext transfer protocol (http), a protocol commonly used by the World Wide Web. In alternate embodiments, media content 110 is distributed from the content server 102 to the client device 104 as a media stream 114 via a cable network, radio frequency signal, over-air broadcast, satellite transmission, or via an IP connection utilizing any number of encodings such as .Net remoting, binary serialization, plain text, and the like.

[0017] Client device 104 also communicates with content server 102 via a communication control channel 116 which may also be implemented as any data communication medium or Internet protocol (IP) connection. Client device 104 receives view control input commands and other information from a user-operated input device, such as from remote control device 118. View control input commands include content navigation inputs such as fast-forward, skip-ahead in a program, jump to a next segment, pause the program, rewind, and the like.

[0018] A user can initiate a request to receive an on-demand movie, for example, with the remote control device 118. The client device 104 communicates the request for the movie to the content server via the communication control channel 116. The content server 102 receives the movie request and obtains the requested movie from the on-demand media content 110 maintained with storage media 108. The content server 102 then distributes the on-demand movie to the

client device 104 via the communication network 112 as media content 120 of the media stream 114.

**[0019]** The content server 102 may also prepend an advertisement 122 to the media content 120 in the media stream 114, and distribute the advertisement 122 to the client device 104 along with the media content 120. Alternatively and/or in addition, the content server 102 can include one or more advertisements between segments of the media content 120 or after the media content 120 in the media stream 114. An advertisement included with media content 110, such as a requested on-demand movie, can be for any product or service and can be rendered as an image, video, audio and/or any combination thereof.

**[0020]** The client device 104 receives the media content 120 (e.g., the requested on-demand movie in this example) and the advertisement(s) 122, and initiates rendering the advertisement and media content on display device 106. A user can initiate a view control input with the remote control device 118, such as a content navigation input, to advance past or replay the advertisement or any portion of the movie. For example, to advance past the advertisement, the user can initiate a fast-forward, skip-ahead, or jump to a next segment command. To replay the advertisement or a portion of the movie, the user can initiate a replay or rewind command. Further, the user may initiate a pause or stop command to suspend or stop rendering the advertisement or movie. Any such view control input is communicated to the content server 102 from the client device 104 via the communication control channel 116.

**[0021]** The content server 102 receives a view control input from the client device 104 and processes the view control input accordingly in response to the command. For example, if a view control input is received as an advance



command (e.g., to advance past the advertisement 122), the content server 102 stops distribution of media stream 114, and begins distribution of a second media stream that includes media content 120 without an advertisement. Alternatively, the content server 102 may distribute the media content 120 without an advertisement by way of an offset in the original media stream 114.

**[0022]** Client device 104 receives the second media stream (or a different offset of the original media stream 114) and can initiate rendering the media content on display device 106. In this example, the requested movie is displayed for viewing without an advertisement being shown first. In another example, a view control input may be received as a replay command (e.g., to replay a sports highlight), in which case the content server 102 again stops distribution of media stream 114, and begins distribution of a second media stream (or a different offset) that includes the replay portion of the media content.

**[0023]** In another embodiment, the content server 102 may distribute media content 120 to a first client device 104(1) via the media stream 114 over communication network 112, and then receive a view control input to pause distribution of the media content. The content server 102 can then receive a second view control input from a second client device 104(2) to resume distribution of the media content 120 from a point at which the media content was paused. Accordingly the content server distributes the media content 120 as a second media stream via communication network 112 to the second client device 104(2). For example, a viewer may have two or more client devices 104 located throughout a residence. The viewer can choose to pause an on-demand movie being rendered from a client device in one room of the residence and resume the on-demand movie in another room of the residence.

[0024] The different content navigation inputs, such as advance, replay, pause, and slow motion, initiate the content server 102 to stop distribution of a first media stream and begin distribution of a second media stream. Each content navigation input has an associated network cost and may result in an alternate media stream and/or additional bandwidth requirements to accommodate the many media stream distribution factors, such as speed, direction, size of the display (e.g., full-screen) and/or resolution. In an embodiment of control-based content pricing, the cost to order and receive media content may be reduced or negated if a user simply does not initiate any content navigation inputs while the media content is being rendered because of the reduced network cost that would otherwise be incurred to respond to the content navigation request or other user-command.

[0025] In another embodiment of control-based content pricing, the cost to order and receive media content, such as a on-demand movie, sporting event, or even music, may also be reduced or negated by a user willing to watch and/or listen to an advertisement prior to or during a rendering of the media content. When client device 104 receives a requested on-demand movie and initiates rendering the movie on display device 106, the user can view the prepended advertisement 126 which reduces the cost that the user will be charged for ordering the on-demand movie. In one implementation, the user can passively accept the advertisement by simply allowing the advertisement to be rendered for viewing. In another implementation, the user can affirmatively accept to initiate a rendering of the advertisement 126 with the remote control device 118 such that a view control input is communicated from the client device 104 to the content server 102 via communication control channel 116.

[0026] The content server 102 includes an advertisement log 124 and a valuation application 126 that allocates a cost to the client device 104 when media content 120 is requested and distributed to the client device 104. Additionally, the valuation application 126 adjusts the cost according to received view control inputs and/or according to how the media content 120 and/or advertisement 122 is rendered. For example, if a user initiates a navigation control input to advance past (e.g., skip over) an advertisement, the cost of a requested on-demand movie may be increased. Similarly, if a user initiates a replay of a sporting event, the user may be charged for the replay control input and for each subsequent view control input. This provides an advertisement revenue model that reflects user viewing choices and selections during playback of requested on-demand media, and enables targeted advertising and media content delivery, while maintaining consumer privacy.

[0027] Although valuation application 126 is illustrated and described as a single application, the valuation application 126 can be implemented as several component applications distributed to each perform one or more functions in the media content distribution system 100. Further, valuation application 126 may be implemented on a device other than the content server 102, where the other device may also be configured for communication with content server 102 in a media content distribution system.

[0028] A duration of both the media content 120 and the advertisement 122 is represented by a base time-line 128. This represents the entire duration over which both the media content 120 and the advertisement 122 are rendered. The base time-line includes a first portion that is a media content duration 130 and a second portion that is an advertisement duration 132. If the duration over which

the media content is rendered does not approximately equate to the base time-line duration 128, then, in one embodiment, the content server 102 can determine that the advertisement was skipped over (e.g., not rendered for viewing). For example, if the duration of a movie 130 is two hours and the advertisement duration 132 is ten minutes, then the base time-line is two hours and ten minutes. If media content is only rendered on display device 106 for two hours, then the advertisement was not rendered for viewing. Alternatively, the content server 102 can determine that an advertisement was skipped over when receiving a content navigation control corresponding to a user command to skip over or past an advertisement via the communication control channel 116.

[0029] In an embodiment, the valuation application 126 may adjust the cost proportionally to the segment of the media content that is rendered for viewing. For example, a viewer may dislike an on-demand movie and only watch half of it, or may only watch part of a sporting event in which a favorite team is losing, and then turn the program off. Accordingly, the valuation application 126 may decrease the cost to reflect the duration that the media content was rendered for viewing. In another embodiment, a viewer may be permitted to watch a portion of a requested program, such as the first one-third of a movie, prior to committing to pay for the movie. Accordingly, the valuation application 126 can adjust the cost, or not charge the viewer, if the viewer turns off the program and/or does not commit to continue receiving the program. Although media content distribution and rendering is described as having an associated cost allocated to a client device, any form of a credit, debit, value, point system, and/or combination thereof can be implemented in a control-based content pricing system.

[0030] The advertisement log 124 tracks and logs whether an advertisement (or advertisements) is rendered for viewing based on received content navigation inputs and/or based on the base time-line duration 128 that corresponds to rendering both the advertisement 122 and the media content 120. The advertisement log 124 is useful to illustrate advertising effectiveness in a control-based content pricing system, and to show current and prospective advertisers the types of advertisements that viewers are watching and during which programs.

[0031] Control-based content pricing can be implemented with any number of different markup languages, such as Extensible Markup Language (XML), or any other type of tag-based language. An XML schema definition (XSD) is included below to define the structure of one example XML implementation of control-based content pricing. In an embodiment, the XSD is implemented as a component of the valuation application 126 by the content server 102.

[0032] XSD Schema for control-based content pricing:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Schema for control-based content pricing-->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">
  <xs:complexType name="base_timelineType">
    <xs:sequence>
      <xs:element name="meter_start" type="meter_startType"/>
      <xs:element ref="meter_end"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="dynamic_content">
```

```

<xs:complexType>
  <xs:sequence>
    <xs:element name="base_timeline" type="base_timelineType"/>
    <xs:element name="fast_forward" type="fast_forwardType"
      maxOccurs="unbounded"/>
    <xs:element name="rewind" type="rewindType"
      maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
</xs:element>
<xs:complexType name="fast_forwardType">
  <xs:sequence>
    <xs:element name="meter_start" type="meter_startType"/>
    <xs:element ref="index_destination"/>
    <xs:element ref="use_count"/>
  </xs:sequence>
  <xs:attribute name="offset" type="xs:int" use="required"/>
  <xs:attribute name="window" type="xs:int"/>
  <xs:attribute name="units" type="xs:string"/>
</xs:complexType>
<xs:element name="index_destination" type="xs:string"/>
<xs:element name="meter_end">
  <xs:complexType/>
</xs:element>
<xs:complexType name="meter_startType">

```

```

<xs:simpleContent>
  <xs:extension base="xs:string">
    <xs:attribute name="currencyUnit" type="xs:string"
      use="required"/>
  </xs:extension>
</xs:simpleContent>
</xs:complexType>
<xs:complexType name="rewindType">
  <xs:sequence>
    <xs:element name="meter_start" type="meter_startType"/>
    <xs:element ref="index_destination"/>
    <xs:element ref="use_count"/>
  </xs:sequence>
  <xs:attribute name="offset" type="xs:int" use="required"/>
  <xs:attribute name="window" type="xs:int" />
  <xs:attribute name="units" type="xs:string" />
</xs:complexType>
<xs:element name="use_count" type="xs:string"/>
</xs:schema>

```

[0033] Methods for control-based content pricing, such as exemplary methods 200 and 300 described with reference to Figs. 2 and 3 respectively, may be described in the general context of computer executable instructions. Generally, computer executable instructions include routines, programs, objects, components, data structures, procedures, modules, functions, and the like that perform particular functions or implement particular abstract data types. The

methods may also be practiced in a distributed computing environment where functions are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, computer executable instructions may be located in both local and remote computer storage media, including memory storage devices.

**[0034]** Fig. 2 illustrates an exemplary method 200 for control-based content pricing. The order in which the method is described is not intended to be construed as a limitation, and any number of the described method blocks can be combined in any order to implement the method. Furthermore, the method can be implemented in any suitable hardware, software, firmware, or combination thereof.

**[0035]** At block 202, a request is received from a client device to receive media content. For example, a client device 104 requests media content 110, such as an on-demand movie that has been selected by a user via remote control device 118. The content server 102 receives the request for the media content 110 from client device 104 via the communication control channel 116.

**[0036]** At block 204, the media content is distributed to the client device in response to receiving the request. For example, content server 102 distributes media content 120 as a part of media stream 114 via the communication network 112 to the client device 104. At block 206, an advertisement is distributed with the media content. For example, the content server 102 prepends an advertisement 122 to the media content 120 in the media stream 114 and distributes the advertisement 122 to the client device 104 along with the media content 120.

**[0037]** At block 208, a cost is allocated to the client device when distributing the media content to the client device. For example, the valuation application 126



of the content server 102 allocates a cost for distributing the requested on-demand media content 110 to the client device 104, and associates the cost with the client device.

**[0038]** At block 210, a view control input is received from the client device that indicates how the media content and/or advertisement is to be rendered. For example, the client device 104 communicates a view control input, such as a content navigation control, to the content server 102 via the communication control channel 116. The client device can receive a view control input as a user input command selected by the user via remote control device 118. A content navigation input can be received to advance past an advertisement, to advance the media content, to end the distribution of the media content to a client device, and to replay a portion of the media content being rendered.

**[0039]** At block 212, the cost is adjusted according to the view control input and how the media content and/or advertisement is rendered. For example, the valuation application 126 can decrease the cost according to a decrease in bandwidth to distribute a reduced resolution media content to the client device. Further, the valuation application 126 can decrease the cost based on the advertisement being rendered for viewing, and in response to the distribution end of the media content, such as when a viewer turns a program off. The valuation application 126 can increase the cost based on the advertisement not being rendered for viewing, in response to a command to advance the media content, in response to a command to replay a portion of the media content, and in response to a command to pause the media content.

**[0040]** At block 214, whether or not an advertisement is rendered for viewing is logged. For example, advertisement log 124 tracks and logs whether an

advertisement is rendered for viewing based on received content navigation inputs and/or based on rendering both the advertisement and the media content.

[0041] Fig. 3 illustrates an exemplary method 300 for control-based content pricing. The order in which the method is described is not intended to be construed as a limitation, and any number of the described method blocks can be combined in any order to implement the method. Furthermore, the method can be implemented in any suitable hardware, software, firmware, or combination thereof.

[0042] At block 302, media content is requested from a content server. For example, a client device 104 requests media content 110, such as an on-demand movie that has been selected by a user via remote control device 118. At block 304, the media content is received from the content server. For example, client device 104 receives media content 120 from content server 102 as a part of media stream 114 via the communication network 112.

[0043] At block 306, an advertisement is received with the media content. For example, client device 104 receives advertisement 122 from content server 102 as part of media stream 114 via the communication network 112. At block 308, a rendering of the media content is initiated. For example, client device 104 initiates that the received media content be rendered for viewing on display device 106.

[0044] At block 310, a view control input is received that indicates how the media content is to be rendered. For example, the client device 104 can receive a view control input as a user input command selected by the user via remote control device 118. Further, the view control input can include a command to advance past the advertisement such that the advertisement is not rendered for viewing, a

command to render the advertisement for viewing, a command to replay a portion of the media content being rendered, and a command to advance the media content being rendered.

**[0045]** At block 312, the view control input is communicated to the content server to provide a basis to adjust an allocated cost for receiving the media content. For example, the client device 104 communicates the view control input to the content server 102 via the communication control channel 116. The cost allocated to the client device 104 can be adjusted by the valuation application 126 based on whether the advertisement is rendered for viewing. Further, the view control input can be communicated to the content server as a command to advance past the advertisement to provide a basis to increase the allocated cost, as a command to render the advertisement to provide a basis to decrease the allocated cost, as a replay command to provide a basis to increase the allocated cost, and as an advance command to provide a basis to increase the allocated cost.

**[0046]** Fig. 4 illustrates a television-based system 400 that includes an exemplary client device 402 and a display device 404 on which the media content and advertisements of control-based content pricing are rendered for display. Client device 402 can be implemented as a set-top box, a satellite receiver, a TV recorder with a hard disk, a digital video recorder (DVR) and playback system, a game console, an information appliance, and as any number of similar embodiments.

**[0047]** Client device 402 includes one or more media content inputs 406 which may include tuners that can be tuned to various frequencies or channels to receive television signals, and/or which may include Internet Protocol (IP) inputs over which streams of media content are received via an IP-based network. Client

device 402 also includes one or more processors 408 (e.g., any of microprocessors, controllers, and the like) which process various instructions to control the operation of client device 402 and to communicate with other electronic and computing devices.

**[0048]** Client device 402 can be implemented with a disk drive 410 and a storage media 412, examples of which include a random access memory (RAM) and a non-volatile memory. Disk drive 410 can include any type of storage device, such as a hard disk drive, a recordable and/or rewriteable compact disc (CD), a DVD, a DVD+RW, and the like. The memory components provide data storage mechanisms to store various information and/or data such as received media content, program guide data 414, and recorded programs 416.

**[0049]** An operating system 418, application program(s) 420, and a program guide application 422 can be maintained with storage media 412 and executed on processor(s) 408. The program guide application 422 is implemented to process the program guide data 414 and generate program guides for display which enable a viewer to navigate through an onscreen display and locate broadcast programs, recorded programs, video on-demand programs and movies, interactive game selections, and other media access information or content of interest to the viewer.

**[0050]** Client device 402 further includes communication interface(s) 424 and a modem 426. The communication interface(s) 424 can be implemented as any one or more of a serial and/or parallel interface, a wireless interface, any type of network interface, and as any other type of communication interface. Modem 426 facilitates client device 402 communication with other electronic and computing devices via a conventional telephone line, a DSL connection, cable, and/or other type of connection.

**[0051]** Client device 402 also includes a content processor 428 which can include a video decoder and/or additional processors to receive, process, and decode media content and program data. Client device 402 also includes an audio and/or video output 430 that provides the audio and video to display device 404, or to other devices that process and/or display, or otherwise render, the audio and video data. Video signals and audio signals can be communicated from client device 402 to television 404 via an RF (radio frequency) link, S-video link, composite video link, component video link, analog audio connection, or other similar communication links.

**[0052]** Although embodiments of control-based content pricing have been described in language specific to structural features and/or methods, it is to be understood that the subject of the appended claims is not necessarily limited to the specific features or methods described. Rather, the specific features and methods are disclosed as exemplary implementations of control-based content pricing.